

REMARKS

Claims 1-10 are now pending in the application. Minor amendments have been made to the claims to simply overcome the rejections of the claims. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102

Claims 1-4, and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Tovey et al. (U.S. Pat. No. 6,231,565). This rejection is respectfully traversed.

Applicants disagree that Z-axis movement of Tovey et al. patent anticipates the present invention. Specifically, the Z-axis movement of the Tovey et al. patent '565 is driven by a threaded rod which is rotated by means of a pulley system and complementary motor. The motor rotates the threaded rod, which is threadingly engaged with a nut 29, affixed to the supporting frame, which raises and lowers the laser head device. This actuating means is affixed to and positioned proximal to the laser head.

In contrast, Applicants' invention utilizes a remote mounted actuation mechanism 28 attached to the processing head by means of a flexible cable within an outer conduit. Furthermore, the '565 patent fails to teach, anticipate, nor render obvious the use of an air cylinder to maintain tension on the flexible drive cable, in that no drive cable is utilized nor taught by the prior art of reference.

The advantage of Applicants' invention is to provide a means of locating the actuating mechanism some distance away from the harsh environment of the

processing laser head, whereas the Tovey patent contains the Z-axis actuating means proximal the laser head. Furthermore, the size of the actuating system is less of an issue in that the payload of the robotic arm does not factor into play and, as a result, there is flexibility in choosing an actuating mechanism for a given application.

Furthermore, Applicants' invention teaches of a height sensor located within the laser head unit of the assembly, which sends a signal through a wire to a remote mounted electronics module 36. The Tovey patent fails to teach of an incorporated height sensing means within the laser head. In light of the above, Applicants respectfully disagree that the above cited reference anticipates the present invention, and has amended the claims to more particularly point out the subject matter of the present invention. Therefore, withdrawal of the above rejection based upon 35 U.S.C. §102(b) is requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 5-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tovey et al. (U.S. Pat. No. 6,231,565) in view of Uchino et al. (U.S. Pat. No. 5,374,804). This rejection is respectfully traversed.

For the sake of brevity, Applicants would like to reiterate that the height sensor of the present invention is positioned within the laser head 62, which sends a signal to a remote sensor electronics module based upon the measurement between the laser processing head and a work piece. Neither the '565 or '804 patent teach, anticipate, or render obvious a height sensing signal being translated to a remote signal processing

module from the laser processing head for interpreting the height between the processing head and the work piece.

Furthermore, as mentioned, neither the '565 nor '804 patent, alone or in combination, teach of a cable controlled actuating unit wherein the actuation mechanism may be mounted remotely from the robotic arm by means of a roller screw operated cable drive. Applicants have amended Claim 8 to more particularly point out that which is regarded as the invention and, therefore, withdrawal of the above rejection is respectfully requested.

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Tovey et al. (U.S. Pat. No. 6,231,565) in further view of Bishop (U.S. Pat. No. 6,211,483). This rejection is respectfully traversed.

Applicants acknowledge Examiner's comment that the air cylinder is merely a type of actuator, but neither the Tovey '565 nor Bishop '483 patent, alone or in combination, teach, anticipate, nor render obvious the concept of utilizing an air cylinder in combination with a cable and sheath driven actuating means, allowing the remotely mounted actuating means to maintain tension on the cable assembly at all times. Therefore, reconsideration of this rejection is respectfully requested.

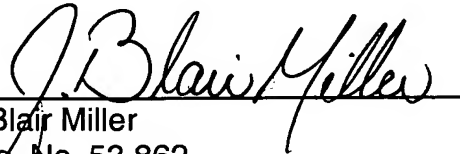
CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office

Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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